

**NAME**

IsdbS3Mux - create a multiplexed ISDB-S3 file

**SYNOPSIS**

IsdbS3Mux **-p** params [-v] [-b] [-x] -o outfile infile1 infile2...

**DESCRIPTION**

IsdbS3Mux is a tool to convert one or more transport-stream files into a valid ISDB-S3 PCAP TLV stream. The resulting stream can be used for ISDB-S3 modulation using the DekTec StreamXpress player.

**OPTIONS**

The following options are supported:

**-p** param1=val1,param2=val2...

Specifies the modulation parameters in a comma-separated parameter-value list. See the PARAMETERS section for a list of supported parameters and their values.

**-v** Sets verbose mode.

**-b** Displays the computed transport-stream bitrate of the input files.

**-x** Re-multiplexes the input files to the computed transport-stream bitrates.

**-o** outfile Sets the output filename.

Infile[j]

Name of the j-th input file to be multiplexed.

The input stream type can be transport-stream or TLV-stream. In case of transport-stream input, the file shall contain 188-byte packets. The bitrate of the input file is constrained by the modulation type, code rate and number of slots used. Using the **-b** option shows the computed transport-stream bitrates based on the given modulation parameters. Using the **-x** option re-multiplexes the input files to the computed transport-stream bitrates.

In case of TLV-stream input, the input shall be a PCAP file containing UDP packets. The payload of each UDP packet shall contain one TLV packet including its header. The IsdbS3Mux generates padding according to the PCAP timestamps.

**PARAMETERS**

The following modulation parameters are recognized for the **-p** option:

tmode[i] Modulation parameters for hierarchy layer i (i<8). A maximum of 8 layers with different modulation parameters can be defined.

mod bpsk | qpsk | 8psk| 16apsk | 32apsk  
Modulation type for this layer.

cod 1/3 | 2/5 | 1/2 | 3/5 | 2/3 | 3/4 | 7/9  
| 4/5 | 5/6 | 7/8 | 9/10  
Code rate for this layer.

```

slot_count 5..120
The number of slots per frame used for this
hierarchical layer (a multiple of 5 slots). The
total number of slots per frame is 120, so the sum
of all slot_count must be 120.

back_off 0..255
The power level of this hierarchical layer below
the output level in 1/10 dB units.

relstream[j] Specifies the mapping between the input stream file(s) and
the available slots.

stream_type 1 (Transport-stream) | 2 (Single-TLV stream)
Input stream type.

slot_count 1..120
The number of slots that are used for the
transmission (including dummy slots). The slot
count is described in the section SLOT COUNT.

tsid 0..65535
Transport-stream identifier (TSID) for this
transport stream.

```

**SLOT COUNT**

Each frame contains 120 slots. Each layer contains a multiple of 5 slots. This number of slots is given in the "tmode" array. The sum of the number of slots in "tmode" should be 120.

Depending on the constellation, only "k\*n" slots among the "5\*n" are really used for the transport-stream transmission (the other slots are dummy slots).

The table below shows the usable slots for each constellation.

Constellation	Slot count multiple of	Useable slots for transmission (k)
BPSK	5	1 of 5 slots
QPSK	5	2 of 5 slots
8PSK	5	3 of 5 slots
16APSK	5	4 of 5 slots
32APSK	5	5 of 5 slots

**EXAMPLE**

```
IsdbS3Mux -v -x -p "tmode[0]={mod:8psk,cod:3/4,slot_count:120,back_off:0},
                      relstream[0]={stream_type:2,slot_count:120,tsid:0x0001}"
                     -o out.pcap fileA.pcap
```

Create an ISDB-S3 multiplex with 1 hierarchical layer:

Layer 0: 8PSK, code rate 3/4, uses 120 slots (72 8PSK + 48 dummy)

One TLV stream input files is used:

fileA.pcap ID=0x0001; Uses 120 slots (Layer 0)

```
IsdbS3Mux -v -x -p "tmode[0]={mod:bpsk,cod:1/3,slot_count:20,back_off:0},  
tmode[1]={mod:qpsk,cod:2/5,slot_count:20,back_off:0},  
tmode[2]={mod:8psk,cod:1/2,slot_count:20,back_off:0},  
tmode[3]={mod:16apsk,cod:3/5,slot_count:20,back_off:10},  
tmode[4]={mod:32apsk,cod:9/10,slot_count:40,back_off:10},  
relstream[0]={stream_type:1,slot_count:80,tsid:0x40F1},  
relstream[1]={stream_type:1,slot_count:40,tsid:0x40F2}"  
-o out.pcap fileA.ts fileB.ts
```

Create an ISDB-S3 multiplex with 5 hierarchical layers:

Layer 0: BSK, code rate 1/3, uses 20 slots (4 QPSK + 16 dummy)  
Layer 1: QSK, code rate 2/5, uses 20 slots (8 BPSK + 12 dummy)  
Layer 2: 8PSK, code rate 1/2, uses 20 slots (12 8PSK + 8 dummy)  
Layer 3: 16APSK, code rate 3/5, uses 20 slots (16 16APSK + 4 dummy)  
Layer 4: 32APSK, code rate 9/10, uses 40 slots (40 32APSK + 0 dummy)

Two transport-stream files are used:

fileA.ts ID=0x40F1; Uses 80 slots (Layer 0, 1, 2 and 3)  
fileB.ts ID=0x40F2; Uses 40 slots (Layer 4)

**LICENSE**

A valid ISDB-S3 license installed on a DekTec modulator card is required to run IsbS3Mux.